



# LINOLEUM

*What it is*

HOW IT IS MADE

*in the*

W. & J. Sloane Mfg. Co.

Trenton, N. J.



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# The HOUSE of SLOANE

THE firm of W. & J. Sloane is among the oldest of American institutions. Founded in 1843 by William Sloane, a young Scotchman who had come to this country nine years previously from Kilmarnock where he had learned the trade of rug weaving, the House of Sloane represents eighty-five years of progress, under the continuous leadership of the founder and his direct descendants.

In its early years, W. & J. Sloane dealt only in floor coverings at retail. Success in this field led, however, to a widening of the firm's activities and it became sole selling agents for manufacturers of floor-coverings.

In its wholesale field, too, the growth of the firm was spectacular. Applying always the same sound principles of merchandising which had been responsible for its success in the retail field, an extensive and carefully trained sales organization was gradually built up. In the past fifty years, the Sloane wholesale sales organization has represented several of the largest and most successful of the American floor-covering mills, advising them on patterns, prices, quality and other merchandising problems and distributing their output to the trade throughout the country.

It was thus only natural that when the newly invented linoleum commenced to replace floor oilcloth toward the end of the nineteenth century, W. & J. Sloane were among the first to distribute it in this country. Linoleum was invented by an Englishman, Frederick Walton, and was first manufactured in England. When one of the Scotch mills decided to build a plant to manufacture linoleum in the United States, W. & J. Sloane became its selling agent. In 34 years hundreds of millions of dollars worth of this mill's linoleum was distributed through the Sloane organization.

As a natural development of their previous activities in the wholesale end of the industry, the House of Sloane entered in 1926 the manufacture of their own linoleum product, bearing their own name and brand with all that it signifies. Not only were they in possession of the important asset of merchandise experience, but added thereto, was the full strength of the knowledge and experience of their separate decorating and house furnishing units which are recognized specialists in those fields.

A Linoleum plant which is twenty years newer than any other in this country was erected under the guidance and control of a skilled manufacturer who had had an exceptionally varied experience in Linoleum plants here and abroad. He has gathered around him a force of skilled artisans who are producing linoleum of a quality to which W. & J. Sloane are content to give their name.

The purpose of this book is to set forth briefly and clearly the story of the manufacture of linoleum as carried on in the W. & J. Sloane plant. It is our hope that this book will serve to answer the many questions addressed to us by our friends — in the trade and among the public — as to what linoleum is and how it is made.



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# Linoleum

*What It Is* ~

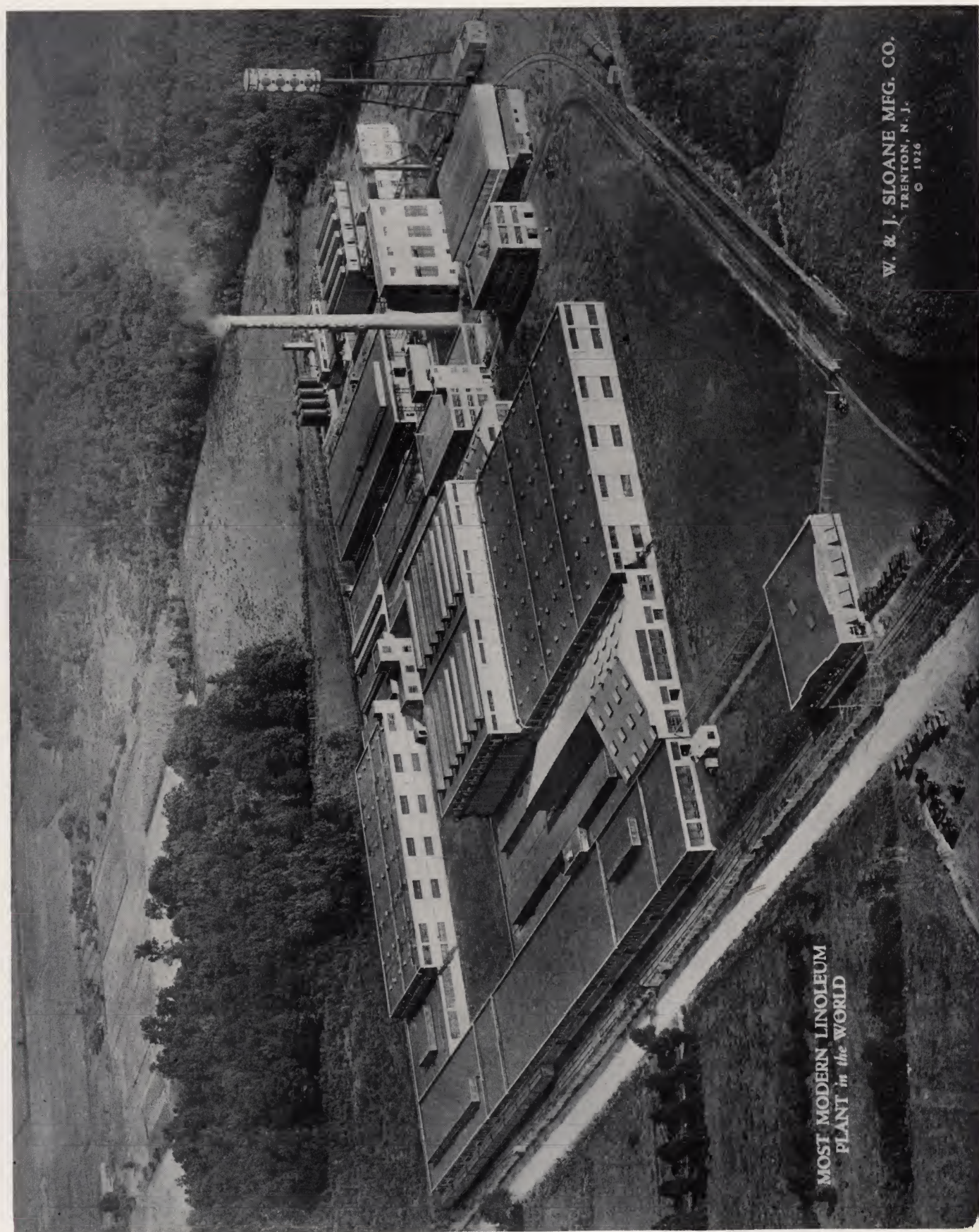
*How It Is Made* ~

IN THE W. & J. SLOANE PLANT



W. & J. SLOANE MFG. CO.  
TRENTON, N. J.





**MOST MODERN LINOLEUM  
PLANT in the WORLD**

**W. & J. SLOANE MFG. CO.**  
TRENTON, N. J.  
© 1926

**SLOANE LINOLEUM PLANT AT TRENTON**

An aerial view of the new W. & J. Sloane Manufacturing Co.'s linoleum plant at Trenton, N. J., showing the progressive one floor layout from raw material reception to finished production shipment. The plant is equipped with the latest and most efficient machines for the manufacture of linoleum.



# What is Linoleum?

**I**F you will think for a moment you will realize that scarcely a day of your life passes in which you do not walk upon linoleum. You probably have linoleum floors in your home,—in your kitchen, surely, and perhaps in your bathroom. Many homes now have linoleum in every single room. Outside of your home you find it wherever you go. Offices, elevators, banks, schools, churches, theatres, libraries, lodges, clubs, factories and public buildings,—practically every type of building uses linoleum for one purpose or another.

In fact so widespread is the use of linoleum that you probably accept it as a matter of course, never giving a thought as to what it is or how it is made. You possibly do not realize, for example, that the ingredients of which linoleum is made come from every continent of the globe or that it takes four months to make a single piece of linoleum. Because these and other facts concerned with the manufacture of linoleum are so interesting this booklet has been prepared to tell you about them. Let us start at the beginning and find out first what linoleum is and how it is made in a modern plant.

## *The ingredients from which linoleum is made come from the four corners of the globe*

Linoleum is a manufactured material made of linseed oil, Kauri gum, resin, cork, color-pigment and burlap. Its name, coined by its inventor, Frederick Walton, is derived from two Latin words, "linum," meaning flax, and "oleum," meaning oil. Thus its original meaning was flax oil. Or, as we know it today, linseed oil.

**Linseed Oil** The principal ingredient of linoleum is linseed oil. No satisfactory substitute has ever been found. This is because linseed oil possesses the peculiar property of thickening, or oxidizing, when exposed to the air. The oxygen in the air combines with the oil and converts it into a tough, elastic material that has many of the characteristics of rubber in addition to individual properties of its own.



Photo by Ewing Galloway  
WOMAN PICKING FLAX IN RUSSIA. THE SEEDS ARE CRUSHED TO MAKE LINSEED OIL



It is because of this oxidizing property that linseed oil is used in the manufacture of paint. Oxidized linseed oil is very tough and practically waterproof, important qualities of linoleum. Linseed oil comes from Argentina, Russia, Canada and the north-western part of the United States.

**Cork** Linseed oil alone would not make linoleum as it is too plastic. Other materials must be combined with it to give substance. That is why cork is used. Cork is resilient and absorbs sound. The cork used for linoleum is the bark of trees



Photo by Ewing Galloway

A GIGANTIC CORK TREE IN SPAIN

grown in Portugal. The cork is first removed when the tree is about twenty-five years old. It is then rough in texture and so coarse as to have little value. Later strippings at intervals of eight to ten years provide better cork. When the stripping is carefully done the tree suffers no injury. In fact it seems to flourish the better for it. After removal from the tree the bark is boiled so that the woody part may be scraped away and the cork made more pliable. It is then flattened out and the slabs, from one-half inch to three inches in thickness, are used for making corks for the wine bottles of France and Spain. The shavings, or cork scrap, are then baled and shipped to America for the making of linoleum. As only fine cork is used for bottle stoppers, this scrap is ideally suited for the manufacture of high grade linoleum.

**Kauri Gum** To enable the oxidized linseed oil to combine more easily with the cork, Kauri gum is used for a binder. Kauri gum is the petrified sap of the Kauri pine tree, found only in New Zealand. The sap falls from the trees on to marshy ground and only after it has lain there for centuries is it in a form that it can be used in the manufacture of linoleum. It is



A KAURI PINE TREE. THE MEN ARE DIGGING IN THE GROUND FOR OSSIFIED KAURI GUM



then mined, broken up into the size and shape of small pebbles and sent to America where it is ground to the consistency of fine sand. Resin, in small quantities, is also used for a binder.

**Burlap** Since Frederick Walton first used burlap as the foundation for linoleum no better fabric has been found. Its sturdiness, flexibility and the difficulty with which it tears, make it ideal for the purpose. As a consequence, the burlap back is one identification of *genuine* linoleum. Burlap is made from jute, grown principally in the marshy district around Bengal, India, and woven to special order in mills of Dundee, Scotland.



MEN RHETTING THE JUTE FIBRES IN INDIA

ferent kinds of linoleum, as each kind is made by a separate process, differing in some degree from the others.

**Color Pigment** Color pigments are used according to the shade of linoleum desired. These then are the principal ingredients from which linoleum is made—linseed oil, cork, Kauri gum, resin, color pigment and burlap. An inspection of a map will show the remote places from which these products come. Before seeing what happens to them after they arrive at the plant let us first get clearly in mind the dif-

## Kinds of Linoleum

THERE are two distinct processes for manufacturing linoleum—one for making Inlaid Linoleums; the other for making Plain, Battleship, Jaspé and Printed Linoleums and Cork Carpet. Different as the final products are, both processes are much the same up to a certain point.

Two  
Kinds of  
Inlaid  
Linoleum

Inlaid is exactly what its name suggests: a linoleum made of different colored patterns set next to each other, or "laid in" on a burlap back. In inlaid linoleum the colors go clear through to the back. In printed linoleums the colors are printed or embedded in the surface. There are two kinds of inlaid linoleum.



### *Straight Line Inlaid*

Straight line inlaid linoleum is made of different colored squares or other cleancut geometric patterns. It is made in both solid and Jaspéd or marbleized colors.

Thus straight line inlaid linoleum is a combination of individual units out of which the design or completed roll of linoleum is built, in the same fashion as a tile layer would construct a floor out of stone tiles. Some designs are produced on automatic inlaying machines, others on hand tables. In the latter every block is carefully laid in place by skilled labor. This hand method permits of more freedom in designing and the finer marbleized effects are produced in this manner.

The new W. & J. Sloane plant has exceptional facilities for the production of high grade hand-blocked inlaid with a quality and finish equal or superior to those produced abroad but with patterns and colors better adapted to the American market.

### *Moulded Inlaid*

In contrast to straight line inlaid which has patterns running on straight angles or squares for mechanical reasons, moulded inlaid linoleum can be made in more fluid designs with practically any character or shape of color combination worked in. This results in a mellow artistic effect and the designer can indulge himself in a vastly wider range of designs and color effects.

As in straight line inlaid, the colors go straight through to the burlap back but they are moulded together from fine particles rather than set in the form of tiles or blocks. A roll of moulded inlaid linoleum is without openings or joints from selvage to selvage and from one end to the other. It is one unit from the time it is first started through the process of manufacture and this means the greatest possible amount of wear.

W. & J. Sloane moulded inlaid are made with new improved machinery so that where the colors join or blend, the effect is more similar to that of straight line inlaid than is generally obtained. That is why the brand name "Clearline" has been given to W. & J. Sloane moulded inlaid.



*The following kinds of linoleum are not known by any group names, such as "inlaid", although all are made by similar processes:*

- |                    |   |
|--------------------|---|
| <i>Battleship</i>  | Battleship is a plain, colored linoleum made to the special specifications of the U. S. Government to withstand the hardest wear.   |
| <i>Plain</i>       | Plain linoleum is practically the same as Battleship but in light weight, as it is more often used for residences and places not subject to the hardest wear.   |
| <i>Jaspé</i>       | Jaspé is the same as Battleship and Plain linoleum, except that two or more colors are used instead of a solid color, giving the pleasing two-tone effect. It gets its name from its resemblance to Jasper, a type of marble. |
| <i>Cork Carpet</i> | Cork Carpet differs from Plain linoleum in that a coarser cork is used in order to obtain a greater resilience and absorption of sound desirable in libraries, churches and other places that demand quietness.               |
| <i>Printed</i>     | Printed linoleum is simply Plain linoleum with patterns embedded in the surface with high-grade oil paints. The enameled paint surface not only sparkles with life and color but is easily kept clean with a damp mop.        |

We now know the different kinds of linoleum and *what* they are made of. Now let us see *how* they are made. In order to understand the processes more clearly you will find it helpful to refer to the numbers on the map of the plant on pages 14 and 15, showing the sequence of operations.



## Linseed Oil Storage

LINSEED oil is delivered direct from the refineries to the plant in tank cars. It is first tested for impurities, then pumped into storage tanks. There are eight tanks, each holding 20,000 gallons—a total oil storage capacity of 160,000 gallons. Two tanks would be sufficient to store the oil needed but the additional tanks make it possible to let the oil stand for two months before it is used. This extra seasoning removes all sediment, thus assuring a finer texture in the finished linoleum.

## Boiling the Linseed Oil

AFTER the oil has stood for two months it is drawn off in pipes to the oil boiling plant. Here it is boiled in huge vats in order to drive off gases and any impurities which may still remain. The length of time required for boiling is about fourteen hours. According to the kind of linoleum for which the oil is to be used the temperature ranges from 350 to 575 degrees. The oil must be watched constantly during the boiling as it is quite inflammable. After boiling it is cooled and pumped into a large tank. It now looks like molasses and is nearly as thick.



THOUSANDS OF GALLONS OF LINSEED OIL ARE BOILED IN THESE HUGE VATS



# Oxidizing the Linseed Oil

YOU will remember that the value of Linseed oil in the manufacture of linoleum is its peculiar property of thickening, or oxidizing, when exposed to the air. The oxidation process which is illustrated in the photographs at the bottom of this page, takes about three months. This process may be described as follows:

The cooled, boiled linseed oil is pumped into the conveyors shown below. These conveyors are perforated and run on tracks. Suspended beneath the tracks at intervals of about six inches are the sheets of cotton scrim, each about 6 feet wide and 18 feet long.

Twice a day by means of cables the conveyors are drawn slowly back and forth the length of the Scrim House, about 100 feet. As they move along the oil pours out, just as water pours from a sprinkling cart, trickling down and adhering to the scrim. Not until this process has been repeated twice a day for three months is the linseed oil sufficiently oxidized for use. At the end of three months the sheets have become covered with an elastic coating of oxidized oil to a thickness of approximately an inch. They look and feel at this stage as though they might be used for floor covering just as they are but as a matter of fact, the process of manufacture has scarcely commenced. The long sheets are now taken down and dusted with whiting so that they will not stick together, and are stored in a huge warehouse.



ABOVE—THE OXIDIZED SHEETS OF SCRIM HANGING FROM RACKS.

LEFT—CONVEYORS ARE DRAWN SLOWLY BACK AND FORTH THE LENGTH OF THE SCRIM HOUSE. OIL DRIPS ONTO THE SCRIM, BUILDING IT UP CONTINUALLY.



It is possible to make a linoleum fabric with oil that has been rushed through the boiling and oxidizing process but it is well to remember that only by careful methods can linoleum be manufactured that will give genuine service. The oxidizing process described above is the Walton process used in the W. & J. Sloane plant. This process takes longer than any other oxidizing process but gives more satisfactory results.

## Making Linoleum "Cement"

FROM the Oxidizing House the oxidized oil-covered sheets are taken to the "Cement" Building where they are ground up and placed in huge mixing kettles together with Kauri gum and resin. The Kauri gum and resin, as mentioned before, are used for binders. Heated to a temperature of 275 degrees, these ingredients are beaten and kneaded by giant paddles until they are thoroughly mixed. The mixture is then emptied into bins where it is allowed to cool and is dusted with whiting. It is now what is technically known as "cement" and has the consistency of a fine, thick sponge. It is however much more resilient. As the "cement" is now ready to be combined with the cork, let us see what happens to the cork between the time it arrives at the plant and the time it is ready for mixing.

## Cork Storage

CORK comes to the plant from Portugal, Spain and northern Africa in irregular shapes and sizes. Before it can be used for linoleum it has to be ground exceedingly fine. The first step takes place in the Cork Storage Building. The cork is



CORK IN ITS NATURAL FORM IS STORED HERE UNTIL GRINDING IS DESIRED



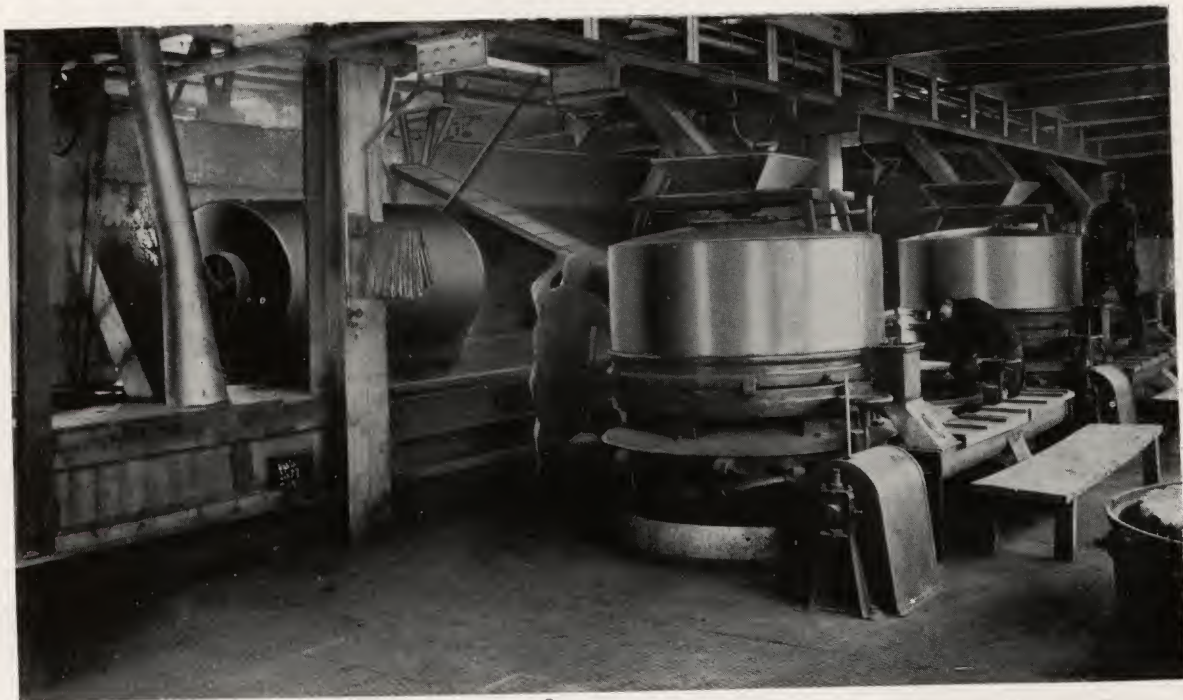
placed in a crusher where it is broken up into small pieces and then blown through a pipe to the Cork Grinding Building.

## Cork Grinding

HERE by prolonged grinding, the cork is reduced from pieces about as large as kernels of corn to the fineness of flour. The grinding operation is similar to that used in grinding flour, the cork being ground between two cylindrical stones moving in opposite directions. The grinding stones are known as French Burr, the hardest stone in the world. They are especially imported from France and weigh about 2 tons each.

Before the cork is finally ready for use it must pass through a screen with from twelve to sixty openings to the square inch. It might be thought that the grinding and re-grinding of the cork would destroy its elasticity. On the contrary, it seems to increase it and the powdered cork feels more elastic than before grinding. It is this property which helps give finished linoleum its pleasing resiliency.

The degree of fineness to which the cork is ground has a direct effect on the quality of linoleum. Finer cork makes for a denser, more compact piece of linoleum that renders the greatest amount of wear. That is why cork has always been ground to extra fineness in the W. & J. Sloane plant.



A BATTERY OF CORK GRINDING MACHINES



## Preparing the "Mix"

UP to this point the operations which have been described have to do with the manufacture of all kinds of linoleum. From now on the processes differ. Let us first follow the processes for making Battleship, Plain, Jaspé, Cork Carpet and the base for Printed Linoleum.

The first step is to combine the ground cork, or cork flour as it is called, with the "cement." This combination is termed the "mix" and the building in which it is prepared is called the "Mix" Building. The machines in which the "mixes" are prepared are similar in construction to meat grinders which we use in our homes, only of course on a much larger scale. There is a series of five of these grinders. Into the first, located on the top floor of the "Mix" Building, are placed exact proportions of "cement," cork flour and color pigment, the proportions varying with the kind of linoleum to be made. The mixture is thoroughly ground much as meat is ground and the process repeated, until by the time it emerges from the last grinder on the ground floor, the "mix" looks like colored dough. It is warm and may be pressed together with a slight touch of the fingers. Except for burlap, we now have the material from which the finished linoleum will be made.

## Calendering

WE shall now see how, in a single operation, the "mix" is pressed, uniformly in thickness, texture and density, on to a strip of burlap to form, except for seasoning and trimming, finished linoleum. The machines which perform this operation are called calenders and the operation is known as calendering.

A calender, for purposes of explanation, is nothing more than two huge rollers which rotate slowly in opposite directions and exert by their weight a tremendous



THIS IS THE MIXING ROOM. HERE COLOR PIGMENTS ARE ADDED TO THE VARIOUS BATCHES OF "WALTON CEMENT"

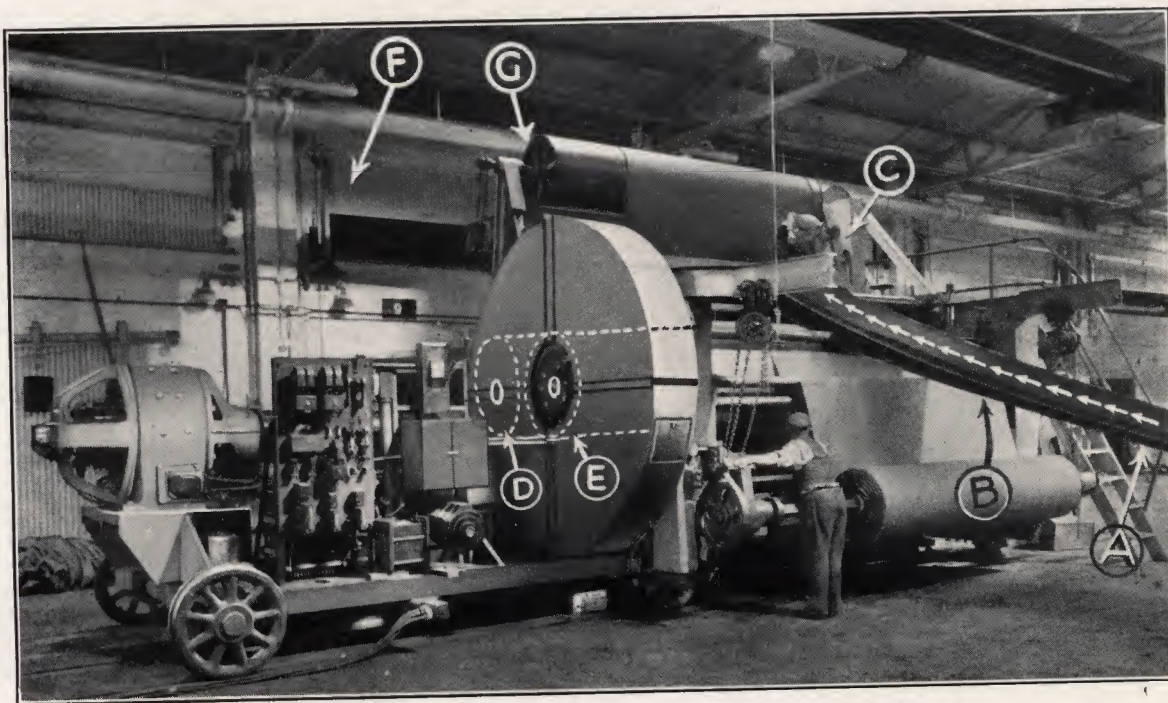


pressure upon the material that passes through them. The calender rolls shown in the photograph on this page are the largest in the world. Most calenders have rollers only 36 inches in diameter. The rollers on this calender are 49 inches in diameter and weigh 55 tons each. The reason such large rollers are used is to assure extra quality. The quality and finish of linoleum depend, among other things, upon the length of time the linoleum remains in pressure between the rollers. By employing larger rollers, the calender can be run at the same speed as a calender with smaller rollers yet provide so much additional roll contact.

If you will follow closely the sequence marked on the photograph you will have a clear idea of the simple but important operation of calendering. The operation is as follows:

The "mix" drops on to the moving belt "A," which moves in the direction shown by the arrows. A roll of burlap "B" moves simultaneously in the same direction. At "C" the "mix" drops down between the two giant rollers "D" and "E" (not shown in the photograph but indicated in outline). These rollers are set a certain distance apart according to the thickness of the linoleum being made. The weight of the rollers presses the "mix" into the burlap and literally irons it smooth and uniform. Except for seasoning and trimming, we now have finished linoleum which passes over roller "G" into the drying compartment, or festoon "F."

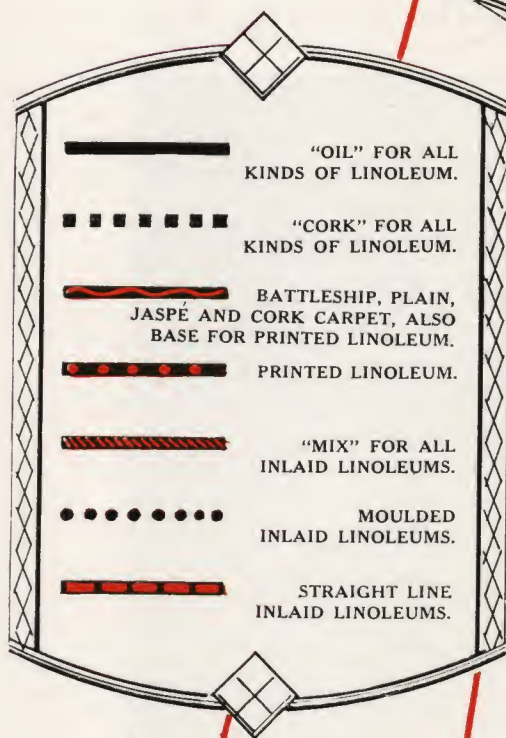
You will notice that the calender runs on a track. This is for reasons of economy. There are 12 ovens in which the linoleum is dried. If the calendars were stationary it would be necessary to roll the linoleum into a large roll beyond the calendars and from



THE HUGE CALENDER USED IN "KEYING" THE "MIX" ONTO THE BURLAP

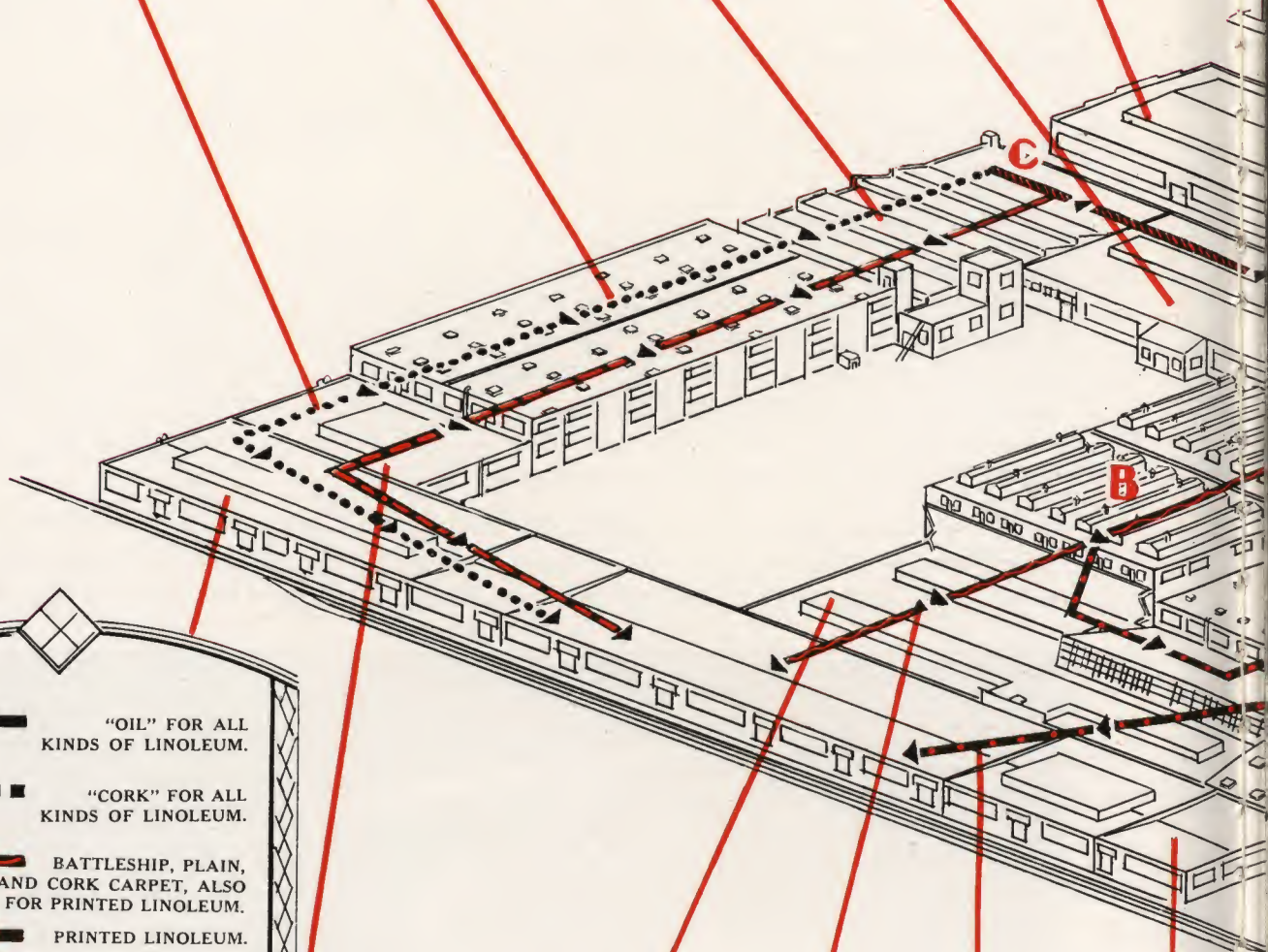


LABORATORY      INLAID FESTOONS      INLAID PRESSES      INLAID "MIX" ROOM      MATERIAL STORAGE      OIL STORAGE TANKS



TRIMMING INLAIDS      WAXING INLAIDS      TRIMMING AND PACKING      WAXING PLAINS, BATTLESHIPS AND JASPÉS      SHIPPING DEPARTMENT

PAINT MIXING



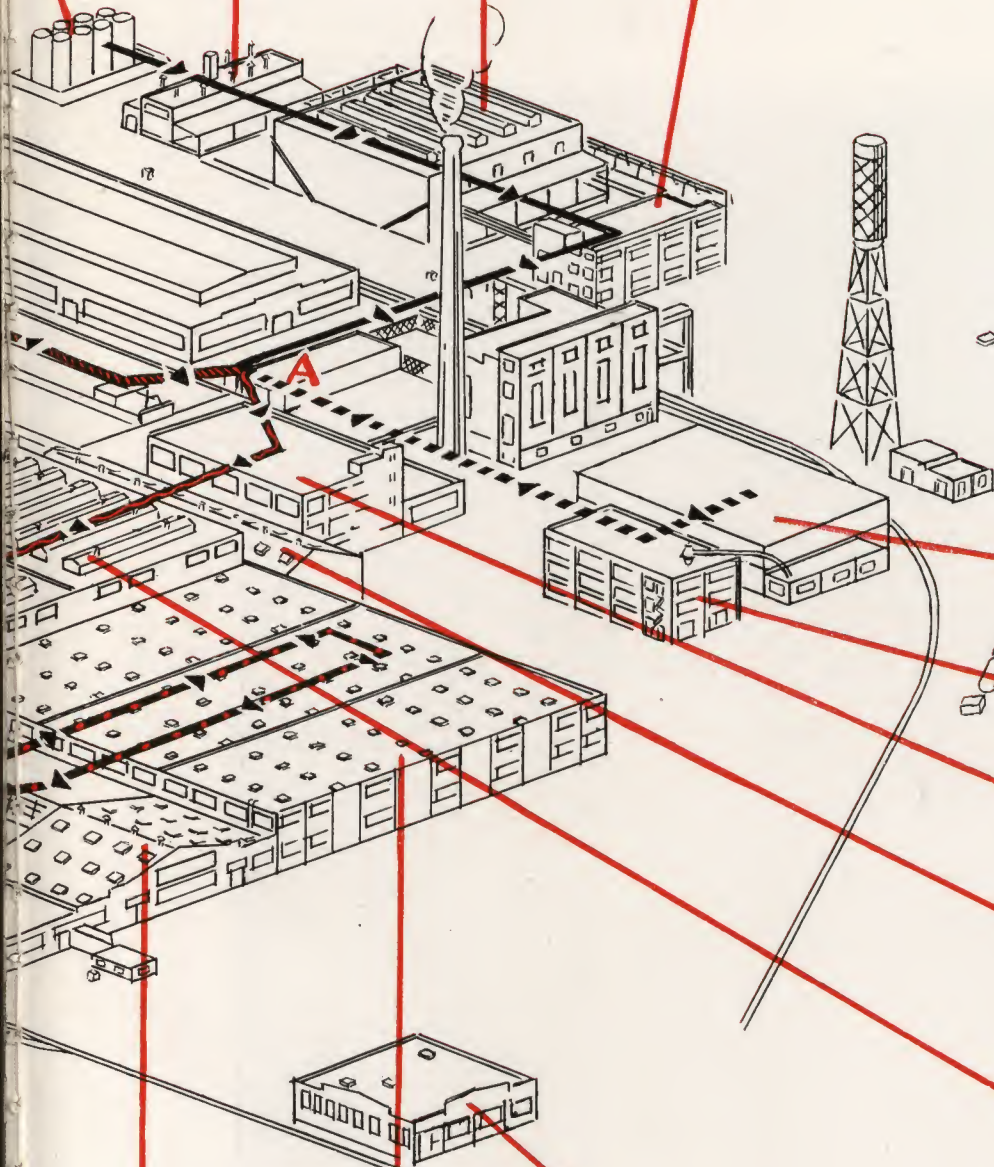


AGE

OIL BOILING

SCRIM HOUSE  
OIL OXIDIZING

"CEMENT"  
BUILDING



CORK STORAGE

CORK GRINDING

"MIX" BUILDING

CALENDER ROOM

"STOVES" FOR  
DRYING PLAIN,  
BATTLESHIP, JASPE  
AND PRINTED  
LINOLEUMS

OFFICE

PRINTING  
ROOM

DRYING RACKS  
FOR PRINTED



there it would have to be festooned into the ovens. This rolling-up process would mean indentation of the burlap on the face of the goods. By mounting the calenders on tracks, only two are needed; one for making linoleum three or four yards wide; the other for linoleum two yards wide. As soon as an oven is filled the calender moves on to the next. Thus two calenders can be kept in operation twenty-four hours a day when necessary.



ONE OF THE FESTOON ROOMS WHERE LINOLEUM IS SEASONED FOR FROM TWO TO EIGHT WEEKS



## Seasoning

**A**S the linoleum comes off the calender it looks ready for use but it is still soft and can be easily dented. In order to harden, or season it, it must be kept in a festoon under a uniform temperature of 140 degrees from two to eight weeks, depending upon its thickness. An oven is nothing more than a heated room about 65 feet high. At the top are racks from which the linoleum is suspended in loops. Each loop is about thirty yards long, which is the reason why Linoleum generally comes in rolls of either 60, 90 or 120 square yards, depending upon whether it is two, three or four yards wide.

Seasoning is a most important part of the manufacture of linoleum. It must continue until the linoleum is thoroughly hardened and all moisture removed. Yet it can not be done too quickly or at too high a temperature lest the linoleum become brittle and break easily.

## Double Waxing

**A**FTER seasoning, the linoleum is run through a machine that applies a coat of liquid wax and then travels over a flat table above which are electric blowers to help dry that portion which has not penetrated the fabric. The linoleum then goes through another set of rollers and brushes where the second coat of wax—this time hard wax—is applied and brushed to a brilliant lustre.



INSPECTION. EVERY YARD OF SLOANE LINOLEUM IS INSPECTED FOR IMPERFECTIONS. IMPERFECT MERCHANDISE IS CLEARLY MARKED "SECOND"



## Inspecting and Trimming

After the linoleum has been thoroughly double-waxed it is taken to the Finishing Room where it is unrolled on long tables. Here it is carefully inspected for flaws. Only absolutely perfect linoleum is passed. All other is clearly marked "Second."

Following inspection the linoleum is trimmed to the proper width and length. Trimming is done by hand with surprising speed and machine-like accuracy. It is then rewound with the surface protected by waxed paper, graded and crated.

## Shipping

From the Finishing Room the crates are taken to the Shipping Department to await shipment. A spur of the Pennsylvania R. R. runs directly to this department.

### *Difference in processes for making Battleship, Plain, Jaspé and Printed Linoleum and Cork Carpet.*

The process just described is that used for making Battleship, Plain, Jaspé, Cork Carpet and the base for Printed Linoleum with these variations:

#### *Battleship*

A special "mix" of the highest quality materials is pressed on an uncoated burlap back. All other linoleums, except Cork Carpets, have backs coated with paint. Due to the fact that the Battleship grades are heavy goods and are all cemented to floors when laid, the coating of burlap back is unnecessary.

#### *Plain*

A "mix" similar to that used for Battleship is pressed on to a coated back. The thicknesses are lighter than Battleship.

#### *Cork Carpet*

A special "mix" with a coarser cork is used in order to obtain greater resiliency and absorption of sound. These goods are not waxed.

#### *Jaspé*

Two color pigments are used in the "mix" instead of a solid color in order to obtain a pleasing two-tone effect.

#### *Printed*

Colored patterns are embedded in the surface of plain linoleum after it has been seasoned. This process we describe on page 22.



# Inlaid Linoleum

WE shall now go back to point "A" on page 14, the dividing line between the processes for making inlaid and the other types of linoleum. We have seen how Battleship, Plain, Jaspé, Cork Carpet and the base for Printed Linoleum is made. Let us now see how Inlaid Linoleum is made.

## *Inlaid "Mix"*

Although a different set of machines are used, the process for making the "mix" for inlaid linoleums is similar to that described above. Practically the same ingredients are used as for making Battleships but a separate mix must be prepared for each color or mixture of colors in a pattern.

## *Straight Line Inlaid*

Let us first see how Straight Line Inlaid is made. Straight Line Inlaid, you will recall, is inlaid made up of different colored squares or other geometric patterns. Take the blue and white Straight Line for instance. Let us see how this is made.

## *Separate "Mix" for Each Color*

First, two separate "mixes" are prepared, one blue, the other white. The white "mix" is put between two rollers and comes out as a sheet of plain white linoleum irregularly shaped, like a cow-hide. It is then cut into squares of identical size by means of sharp steel dies, just as you cut cookies out of dough. The blue "mix" goes through the same process. We now have a supply of blue and white squares all of the size called for in the pattern.

## *Fusing the Squares*

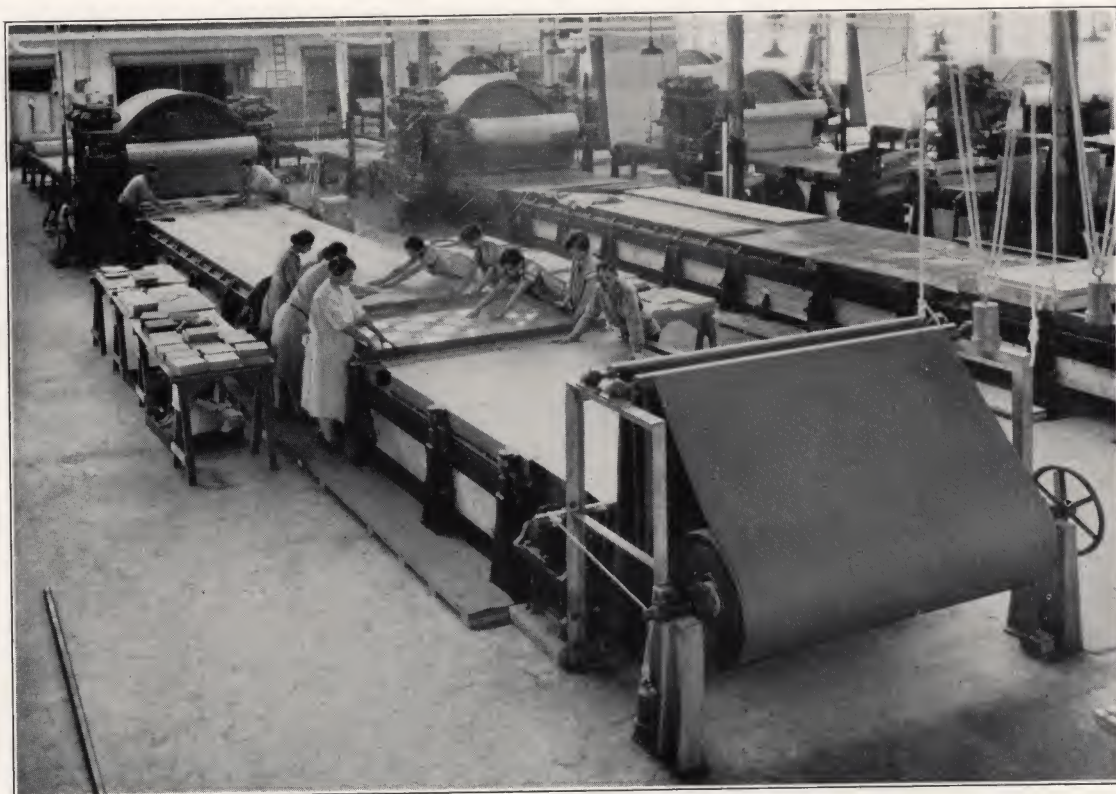
The squares are next "laid in" on a strip of burlap in their proper positions. We now have the design we want but the squares have still to be fused with each other and with the burlap back. This is done by passing the square-covered burlap under a hydraulic press which exerts a pressure of 4000 pounds to the square inch. Under this pressure the linoleum comes out a single piece.

You can see that with this process each color goes clear through to the linoleum back and that the patterns must last as long as there is any linoleum left.



## Seasoning

As with other types of linoleum, inlaid must also be well seasoned before it is ready for use. In the case of inlaids, however, the drying compartments are flat racks. Inlaid linoleum is laid flat instead of being hung in loops as is the case with plain linoleums. It remains in the racks from two to eight weeks, depending on the thickness.



GIRLS LAYING THE MARBLE BLOCKS INTO PLACE. AFTER THE SURFACE OF BURLAP HAS BEEN COVERED WITH THE DESIGN DESIRED, IT IS RUN THROUGH A PRESS WHICH "KEYS" THE LINOLEUM INTO THE BURLAP

## Straight Line Inlaids

Marbleized effects in Straight Line Inlaids are used for high class showrooms, banks, office hallways, and in homes or on any floor where an effect of marble is desired, plus the resiliency and other advantages of the genuine linoleum floor. Marbleized Straight Line Inlaids are made by exactly the same process as ordinary straight line except that the "mix" for each different colored square is made up of a mixture of colors instead of one color. The similarity to marble is obtained by putting the "mix" through a press several times. The first time it comes out it looks like Jaspé. It is then folded back on itself and run through again. It now has somewhat the appearance of marble



but not until it is again folded and run through a third time does it closely simulate the grain and texture of that beautiful stone.

## Double Waxing

We have now followed the manufacture of all types of inlaid linoleum through their seasoning. After they are seasoned they are put through the double-waxing process described previously in the manufacture of Battleships.

The reasons for applying this coat of double-wax to finished goods are important and may be summed up as follows:

For some years the ultimate purchasers of linoleum have made it very plain that they want linoleum with an absolutely smooth surface. The rough coarse surface of the goods they used to buy will no longer satisfy even if they are thoroughly waxed. They absorb dirt and grime too readily. They are too hard to keep clean.

Although attempts have been made to accomplish this result by the use of special lacquer and other finishes, it is the W. & J. Sloane viewpoint that such finishes are of temporary value only, that they will not stand up under traffic abuse and that such linoleum needs waxing after laying, in any event.

In the Sloane process the same result has been accomplished in a more permanent way. Finer materials are used. By extra processing ingredients are ground more finely and mixed more uniformly. Improved equipment presses these fine particles more firmly to produce a denser, more compact piece of goods. The result is a surface that is naturally smoother and finer-textured and will not change with wear. This is the W. & J. Sloane Linoleum finish.

In addition to having this finer quality built in and this naturally smoother surface, all W. & J. Sloane Inlaid, Battleships, Jaspés, and Plain Linoleums are then double-waxed. Waxing has always been recognized by experienced floor-covering men as the proper treatment to maintain linoleums in service. It does no harm to the body of the fabric. It gives an even brighter lustre and makes cleaning easier. Sloane double-waxing saves the necessity and labor of waxing *after laying*.

Aside from occasional waxing, always advocated by the leading manufacturers of linoleum, no special finishes are required on W. & J. Sloane Linoleum.



# Printed Linoleum

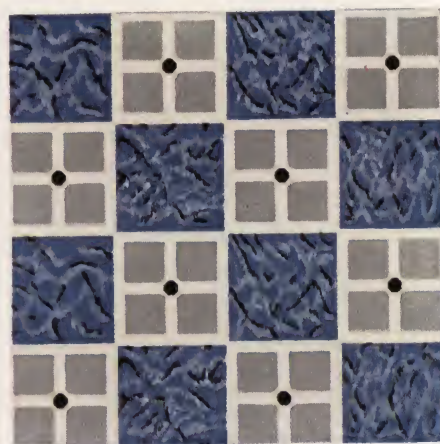
THE printing of linoleum is a fascinating process to watch as the different colors of the pattern are printed in turn before the eye and as finally the finished linoleum, sometimes with as many as six or seven elements of design in as many different colors, moves on into the racks, or drying compartments. The more than human, almost uncanny accuracy of the machine that does the printing is a triumph of modern engineering. To understand the process, so complex and yet so simple let us take a piece of printed linoleum and see how it "got that way." Study photograph on page 23.

There are six different colors in this piece of linoleum. This means that six different colors have to be mixed. The colors come in powdered form and have to be ground and reground until they will pass between rollers less than one-thousandth of an inch apart so that no grit or foreign substance will get into the paint. The care with which the paints are mixed gives the finished linoleum its beautiful lustre and smooth finish.

The paint is applied to the linoleum by wooden printing blocks, on which a part of the design is cut. There must be at least one of these blocks for each color. The fashioning of the printing blocks must be done by experts as each pattern must be absolutely accurate. The blocks are 6, 9 or 12 feet long according to the width of the linoleum to be printed. Each block prints one color on 18 inches of the length of the roll.

A roll of plain linoleum (the base for Printed Linoleum) is placed on a roller at the end of the machine. Steel pins on either side hold it in place and pull it along. The linoleum moves under the first block, which in this case, prints that part of the pattern which is white. Automatically the linoleum stops, the block descends and registers the white portions of the pattern. The block lifts and the linoleum moves on under the next block where the same color (white) is printed over the first printing. Each color is printed twice in order to increase the wearing quality. The block lifts, the linoleum moves on and the same process is repeated until all the colors in the pattern have been printed twice. We now have finished printed linoleum which passes into the racks for drying after which it is inspected, trimmed, crated and held for shipment as described before.

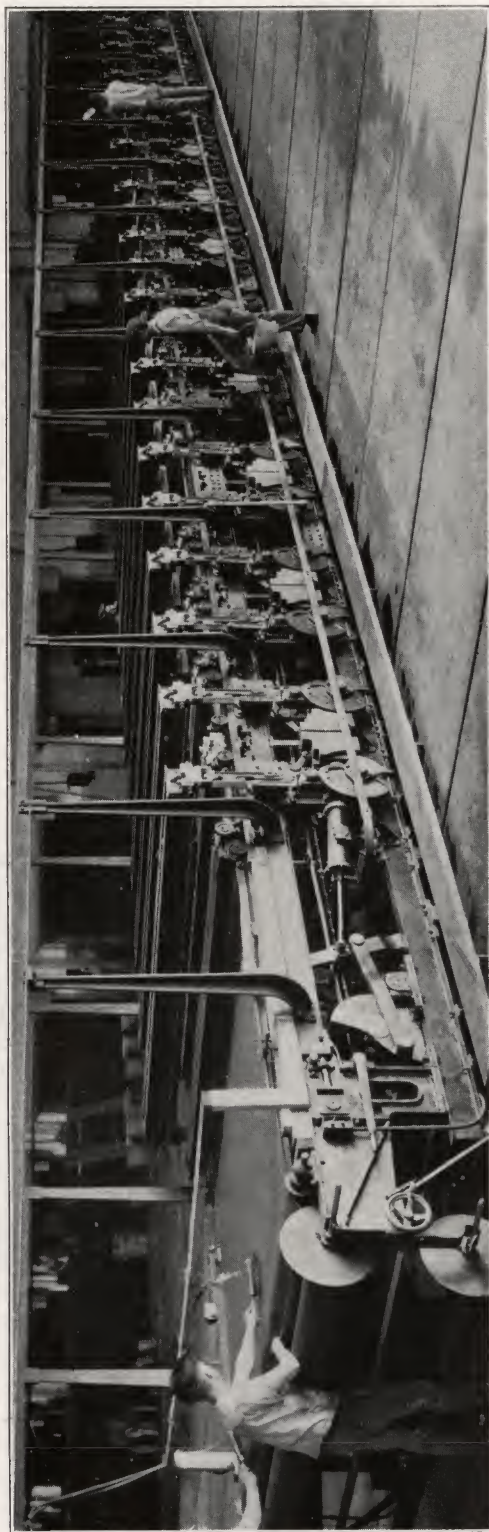
While practically all other linoleums are made only in the 6 feet widths, printed linoleums are also made 9 feet and 12 feet in width. This makes possible floors with fewer seams, in sections of the country where large rooms are the rule. There the wide printed linoleums are very popular.



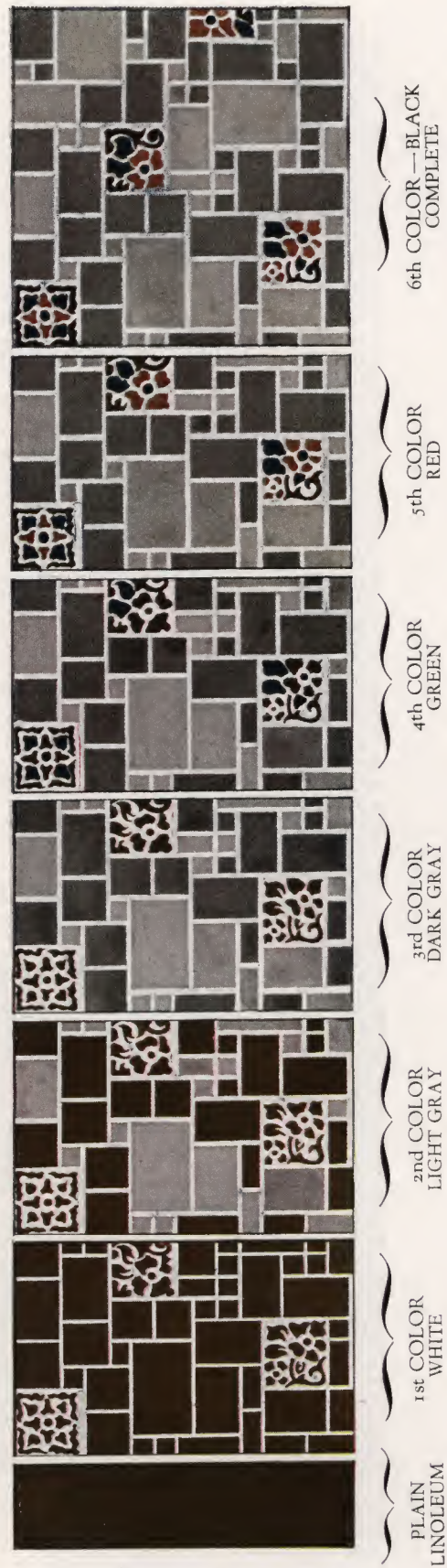
No. 2395—"Superior" Printed Linoleum  
2 yards and 3 yards wide



# One of the Many Presses Employed in Printing W. & J. Sloane Linoleum



## "Printing Process"



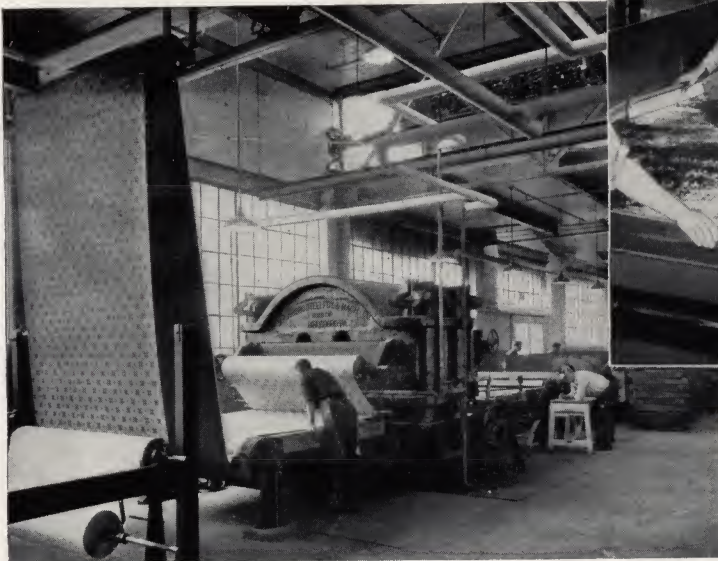


# Moulded Inlaids

**M**OULDED Inlaid linoleum is composed of patterns too varied and complicated to permit of their being die-cut as in the case of Straight Line. Moulded is made by a totally different and unique process. Let us take the piece of Moulded illustrated and see how it is made. This particular piece is made up of a design of five colors—tan, olive, lavender, green, and blue. Five “mixes,” one for each color, are first made as in Straight Line, but kept in loose form for application to the burlap in a different manner. It is in the method of fusing the “mixes” with each other and with the burlap that the process for making Moulded differs from that used in making Straight Line.

A strip of burlap is laid on a long table and pulled towards and through the press. Above the burlap are flat sheets of metal, each perforated with the design of a color. That is, in this case there is one such sheet for tan, another for olive and a third for lavender, etc. These sheets are in reality stencils. As in the machine for printing linoleum, the burlap moves along and stops under the first stencil. Workmen sift the tan “mix” through the perforations. The stencil must be filled thoroughly and yet not too much. When this is done, the stencil lifts slightly, the burlap advances and comes to a stop under the olive stencil where the same process is repeated; thence to the lavender stencil where a similar operation takes place. We now have on the burlap the pattern as it will look when finished but made up of loose material. The “mixes” are laid on so lightly that the workmen must be very careful otherwise they would ruin the entire pattern. This material must be fused together as in making Straight Line. This is done in exactly the same manner—by passing the “mix”-covered burlap into the hydraulic press which has a pressure of about 4100 pounds.

HERE YOU SEE THE MOULDED INLAID LINOLEUM EMERGING FROM THE HYDRAULIC PRESS. THE LINOLEUM IS NOW READY FOR SEASONING.



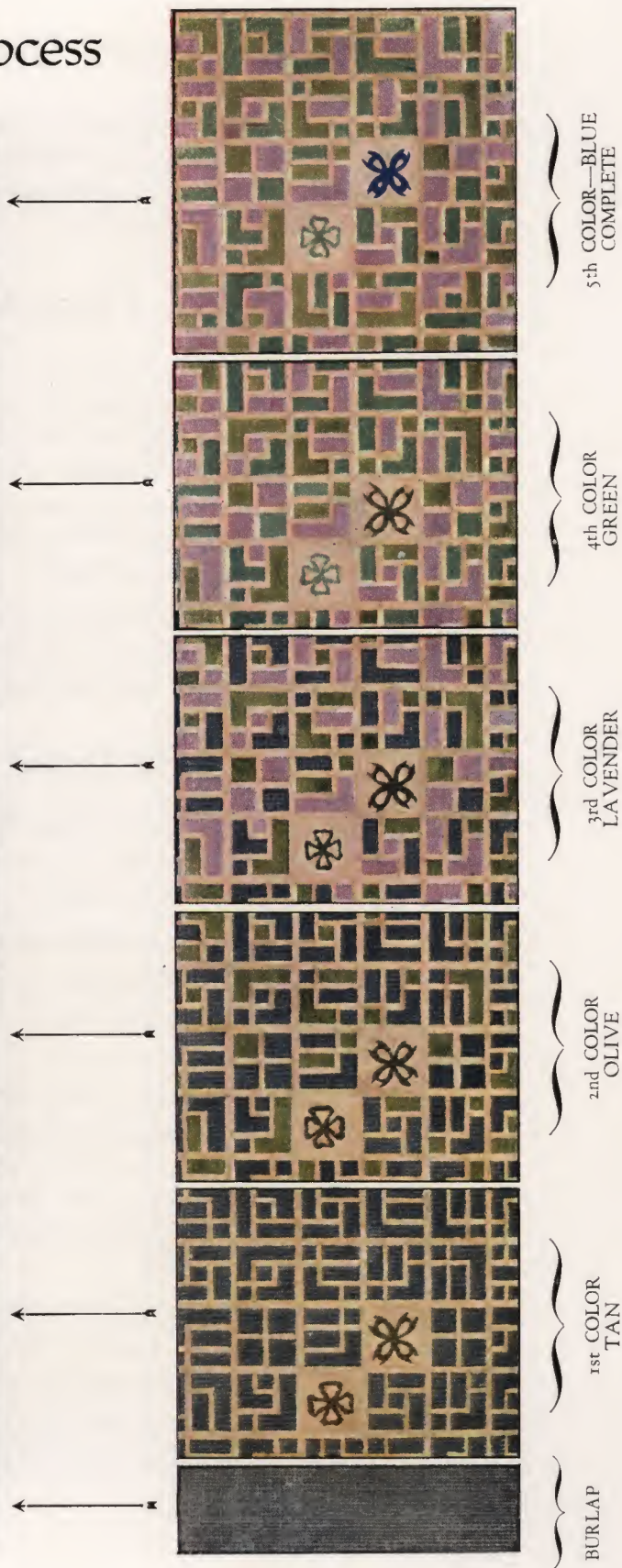
THE POWDERED “MIX” IS SPREAD OVER THE STENCILS IN MAKING “CLEARLINE” INLAID. SEVERAL DIFFERENT STENCILS, AND SEVERAL COLORS OF POWDER MUST BE USED TO COMPLETE A DESIGN.



A Section of the Moulded Inlaid Department—Here "Clearline" is Manufactured



## "Clearline" Process





## Inspection, Trimming and Packing

AFTER the waxing operation is completed the manufacturing process for both types of inlaid linoleum is complete except for the inspection, trimming and packing, which is done in the same manner as described previously in the case of Battleships, Plain Linoleums, etc.

## Chemical Laboratory

Not only is every inch of finished Sloane linoleum minutely inspected, but every precaution for obtaining the highest quality is taken from the very start of each process. Competent chemists in charge of a completely equipped modern laboratory test every shipment of raw materials received. Frequent tests are also made at every stage of each operation. Thus it can be said that W. & J. Sloane Linoleum is really made under the direct supervision of the chief chemist. All the materials used have to meet the unusually high specifications which he establishes.

Thus the Sloane name and trade mark on a roll of linoleum is a virtual guarantee: (1) That it is made of the finest materials; (2) That it is made by improved methods, and (3) That it has passed rigid inspection.

## The Laying of Linoleum

Now that you have learned how W. & J. Sloane Linoleum is made it may be interesting to have information on how it should be laid, since the life of a linoleum floor depends to a considerable degree on proper laying and care.

Most linoleum dealers maintain laying departments which are competent to lay linoleum by approved methods for their customers.

For the benefit of those who wish to do their own laying the following information may be of value:

The 6-ft. widths of linoleum are generally laid parallel to the long side of the room. Plain colors of Battleship linoleum are laid so that the joints lap and both thicknesses of the lap are cut at the same time. This makes an almost invisible joint and the edges fit together. By cutting both thicknesses on a bevel a specially close joint is secured. This method of joining cannot be used with pattern linoleums. The edges are butt-jointed in this case.

Linoleum should be thoroughly rolled after laying—especially the joints. A 150-lb. roller is used and any air bubbles which might be formed under the linoleum are rolled out. The joints require special attention to see that they are down tight.

The use of sandbags or weights on the joints and edges is generally advisable where there are long seams and the area is large.



There are two types of cements used for linoleum—waterproof cement and water resistant paste. For the best work a water resistant paste is used for the main body of the linoleum to within six inches of the seams and edges. The seams and edges are pulled back and the waterproof cement is spread over the floor underneath them. When waterproof cement is used under the joints and edges any surplus cement which might be left on the face of the linoleum should be removed immediately with alcohol. If the cement is allowed to dry on the surface of the linoleum it is difficult to remove.

## Care of Linoleum

Next to good laying, the care accorded a linoleum floor is largely responsible for the service it gives. Wet mopping usually does little more than smear the dirt about and results in a dull, unclean look. Abrasive soap powders with excessive alkali prove very injurious.

The care of linoleum has been thoroughly studied by the Sloane testing laboratories with the view to discovering the most efficient methods of caring for linoleum. The best method of insuring a good result is to wax a linoleum floor from two to four times a year depending on the amount of traffic. This will not only give the floor an even finer appearance, but will also help preserve it and give it longer life. Varnish should never be used on Inlaid Linoleum.

Wax provides a smooth film over the surface of the linoleum to which dust does not readily adhere. When a linoleum floor is properly waxed, cleaning becomes only a matter of using a floor brush occasionally to remove dust, or at infrequent intervals, a damp mop.

## Advantages of Linoleum Floors

Linoleum floors have many practical advantages which commend them particularly for a wide variety of uses.

*Economy*—Compared to other types of floors, linoleum is moderate, both in cost of installation and in cost of upkeep.

*Long Wear*—A floor of W. & J. Sloane Linoleum will wear for years, even when submitted to hard and constant use.

*Germproof*—A Linoleum floor is highly sanitary. Its smooth, closely-knit surface free from cracks or any unevenness, prevents the absorption of dust and germs. This is particularly true of a floor of W. & J. Sloane Linoleum which is subjected to greater pressure in the manufacturing process, thereby attaining greater density and smoothness.

*Easily Cleaned*—Because of its non-absorptive qualities, the day-to-day care of linoleum is ordinarily only a matter of sweeping with a soft brush or wiping with a damp mop.



*Fireproof*—It has been thoroughly demonstrated to the fire prevention boards of nearly all large cities that linoleum is highly suitable for fireproof construction.

*Pleasing Appearance*—Whether in plain colors or in patterns, linoleum floors offer a neat and pleasing appearance. The patterns present unusual decorative possibilities particularly in keeping with the modern trend toward color and design in the floor.

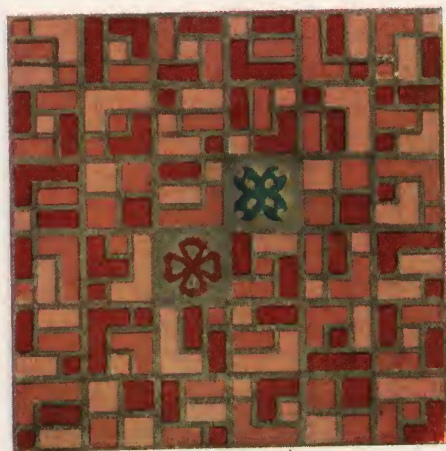
*Insulation*—A floor of linoleum has great insulating qualities. When cemented to the floor it prevents any passage of air in either direction. It helps to maintain an even room temperature in the winter months, and during the summer season the insulating qualities of the linoleum floor retards the heat from permeating the rooms.

*Comfort*—Linoleum floors are resilient and easy to walk on. They are quiet, odorless and soundproof.

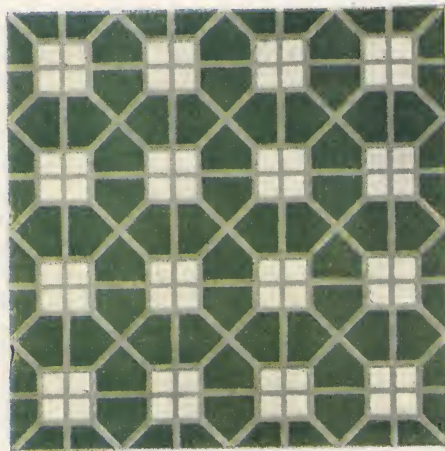
*Decorative Features*—In the W. & J. Sloane lines, there is a pattern or color that will meet your decorative requirements and become a permanent flooring when properly laid, for every room in the house.

*Doing Over Old Wood Floors*—Where old or unsightly floors exist in the home, an entirely new atmosphere and one that usually alters the entire appearance of the room, can be obtained by laying a linoleum floor. This is far less costly or troublesome than ripping up the wood and laying new—and permits of the use of color effects as a foundation for a room of individuality.

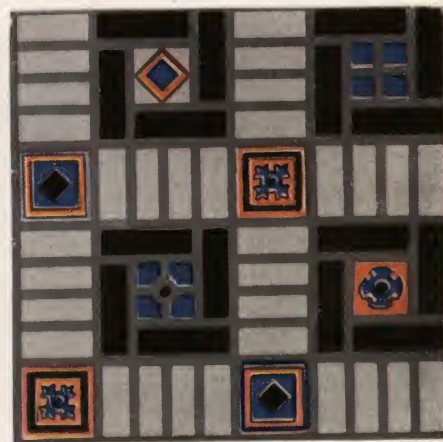
*Abroad* it is a common practice to use linoleums freely throughout the house, as the sole floor-covering, or as a base for throw rugs. With the present American vogue for color and the constant striving for charm throughout the house, what can better be used than the modern, smart W. & J. Sloane Linoleums, with their lovely warm color values, whether it be for the Living Room, Dining Room, Bedroom, Nursery, Hall, Butler's Pantry, Kitchen, Servants' Quarters or Sun Porch.



No. 1395—"Clearline" Inlaid—C Gauge  
2 yards wide only



No. 1280—"Clearline" Inlaid—C Gauge  
2 yards wide only



No. 7088—Felt-Base Yard Goods  
A Quality  
2 yards and 3 yards wide











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